By HOWARD MURAD

Plant and Equipment Expenditures by Foreign Affiliates of U.S. Corporations, 1970-72

Foreign affiliates of U.S. corporations are planning to increase expenditures for plant and equipment 12 percent in 1971 to a total of $14.7 billion, to be followed by a 10 percent increase in 1972 to a total of $16.1 billion. These increases represent a considerable slowdown from the 21 percent growth rate registered in 1970.

EXPENDITURES for property, plant, and equipment by foreign affiliates of U.S. corporations are expected to total $14.7 billion in 1971, up 12 percent from the final 1970 estimate of $13.1 billion. First estimates for 1972 indicate an increase of 10 percent over 1971 to a total of $16.1 billion. (See chart 14, and table 1.)

These findings are based on the latest OBE semiannual survey of about 450 large U.S. firms, with approximately 4,800 foreign affiliates, taken in June 1971. The figures, therefore, reflect the economic environment prevailing at that time. The new economic program announced by the President in August, including the decision to allow the dollar to float against other currencies in foreign exchange markets, has clearly changed that environment.

Spending increased 21 percent from 1969 to 1970. Compared to that increase, the current estimate of 1971 spending shows a considerable slowdown in the rate of growth. The deceleration is centered in manufacturing, and probably reflects the general economic slowdown in Europe. On the other hand, expenditures in petroleum and mining and smelting show substantial increases. The expected growth of spending in 1972 reflects a recovery in manufacturing coupled with sharply reduced gains in petroleum and in mining and smelting.

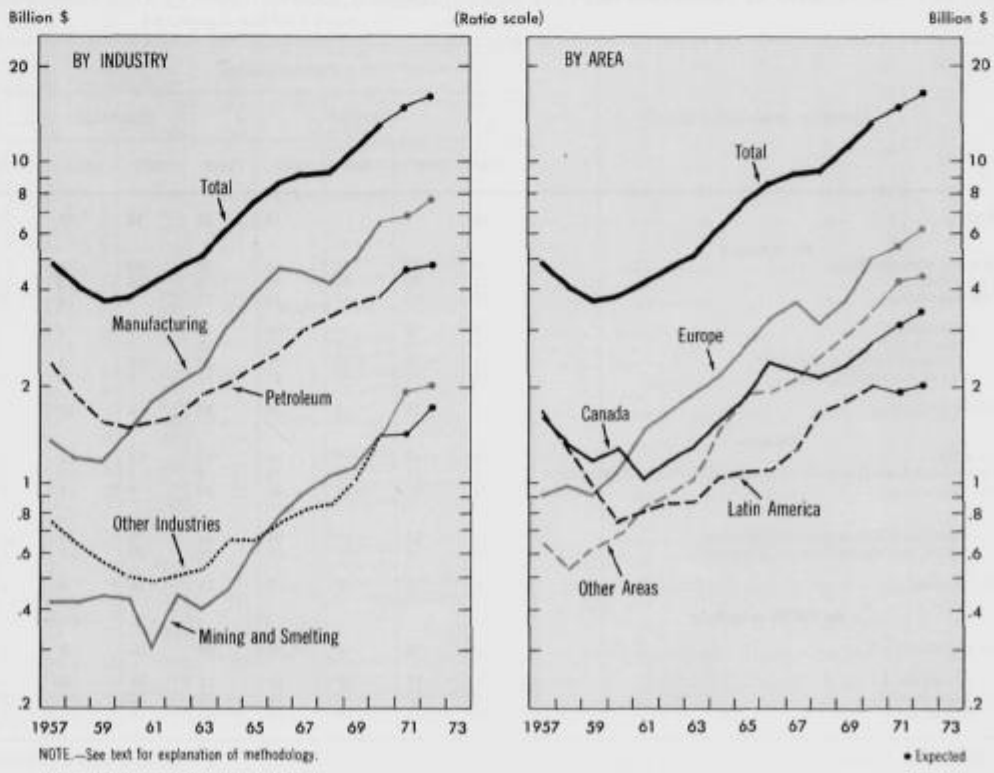
The 1970 figures are final figures (the *E* report for that year), and the total differs only slightly from the estimate made 6 months earlier (the *D* report). The 1971 figures are based on the *C* reports and the 1972 figures on the *A* reports. As usual, table 1 gives 1971 and 1972 estimates adjusted to take account of systematic bias in the reports of planned spending. However, the bias adjustment procedure now used differs from that used previously, and allows, for the first time, publication of bias-adjusted projections in all the tables.

Industry pattern

Outlays by *manufacturing* affiliates (see table 2) are expected to show only small gains in 1971, the total rising 4 percent above 1970 to $6.8 billion. If current expectations for 1972 are realized, outlays will increase 13 percent to $7.6 billion. In both 1971 and 1972, affiliates plan to increase spending in all major areas except Canada. The

CHART 14

Expenditures for Plant and Equipment by Foreign Affiliates of U.S. Companies



small size of the 1971 increase in part reflects reported delays of 1971 spending until 1972.

Within manufacturing, affiliates in the chemical industry plan little change in 1971 and 1972 from the $1.3 billion reached in 1970, with affiliates in Canada planning a decrease of 22 percent in 1971 and 9 percent in 1972. Affiliates in Europe plan an 11 percent increase in 1971 spending, but expect to reduce spending 6 percent in 1972. Both the increase in 1971 and the decrease in 1972 are due largely to the spending pattern of affiliates in the United Kingdom and Germany.

Affiliates engaged in machinery production plan relatively large increases. They plan to increase spending 7 percent in 1971 and 35 percent, to $2.8 billion, in 1972. In both years spending is expected to show especially strong growth in Canada, Latin America, the United Kingdom, and Japan. Largely reflecting spending in Germany, machinery producers in the EEC are projecting a small decrease in 1971, followed by a steep rise of 41 percent in 1972. (The cost of machinery acquired or produced by manufacturing affiliates for leasing to others, a significant factor in the computer manufacturing industry abroad, is counted as part of affiliates' capital expenditure. Therefore, not all the growth registered in this area represents expansion of plant capacity.)

Manufacturers of transportation equipment expect spending to decline 6 percent in 1971 to $1.0 billion, reflecting substantial reductions in Canada and the United Kingdom. Investment is expected to pick up slightly in 1972, but to remain below the 1970 level.

All other manufacturing affiliates taken together expect to increase spending 6 percent in both 1971 and 1972, following an increase of 31 percent in 1970. Increases in 1971 are especially significant in Canada and the United Kingdom. In 1972, increases are particularly large in the United Kingdom, Germany, and Japan.

Affiliates in the *petroleum* industry (see table 3) estimate expenditures of $4.6 billion in 1971, up 22 percent from 1970. Increased expenditures are reported for nearly all major geographic areas, but are especially large for tanker construction. The expected rise in 1972 is only 2 percent, concentrated in Canada, the Middle East, Japan, and those European countries affected by exploration in the North Sea (the United Kingdom, Norway, and the Netherlands). Major declines are reported elsewhere for 1972, particularly in Libya and Latin America.

Led by investment in Canada and Australia, affiliates in *mining and smelting* show the largest percentage increase of any major industry group in 1971, with spending rising 36 percent. The strength of the expected increase in both countries is more than enough to offset a 25 percent decline now seen for mining affiliates in Latin America. The sharp drop in Latin American spending is centered on reductions in Chile, where the government has nationalized some American holdings. The rise in spending by mining and smelting affiliates is much smaller in 1972. A large increase is expected in Canada and affiliates in Mexico and Central America also plan increases, but investment totals for Latin America are expected to remain far below the 1970 volume for that area.

Table 1.—Summary of Estimates of Plant and Equipment Expenditures by U.S. Corporations' Foreign Affiliates, by Percentage Change and Dollar Amount

Industry, area, and schedule	Percent change							Billions of dollars							
	Actual					Projection		Actual						Projection	
	1965	1966	1967	1968	1969[r]	1970	1971	1972	1965	1966	1967	1968	1969[r]	1970	1971	1972
Total	16	7	1	16	21	12	10	7.4	8.6	8.9	9.4	10.8	13.1	14.7	16.1
By industry															
Mining and smelting	25	17	12	0	22	36	7	.6	.8	.9	1.0	1.1	1.4	1.9	2.0
Petroleum	11	10	10	10	6	22	2	2.8	2.5	2.9	3.0	3.6	3.8	4.6	4.7
Manufacturing	18	−1	−7	19	31	4	13	3.0	4.6	4.5	4.2	5.0	6.5	6.3	7.6
Chemicals	21	10	0	−9	16	1	−1	.9	1.0	1.2	1.2	1.1	1.3	1.3	1.3
Machinery	10	4	−7	32	42	7	35	.9	1.0	1.1	1.0	1.3	1.9	2.0	2.8
Transportation equipment	11	−18	−22	28	28	−6	3	.8	1.0	.8	.6	.8	1.1	1.0	1.0
Other manufacturing	21	−7	−6	27	31	6	6	1.3	1.6	1.4	1.3	1.7	2.2	2.4	2.5
Other industries	14	10	3	23	30	4	22	.7	.7	.8	.8	1.0	1.4	1.4	1.7
By area															
Canada	28	−5	−5	10	17	13	11	1.8	2.4	2.2	2.1	2.3	2.7	3.1	3.4
Latin American Republics and other Western Hemisphere	2	17	20	13	5	−3	0	1.1	1.1	1.3	1.6	1.6	2.0	1.9	2.0
Europe	22	12	−14	20	20	9	15	2.6	3.3	2.6	3.1	3.7	5.0	5.5	6.2
European Economic Community	31	16	−19	20	42	9	16	1.4	1.9	2.1	1.7	2.1	2.9	3.2	3.7
Other, including United Kingdom	16	8	−7	19	28	10	11	1.2	1.4	1.5	1.4	1.7	2.1	2.3	2.6
Other areas	3	0	17	15	17	24	0	1.9	1.9	2.1	2.5	2.9	3.4	4.2	4.4
By OFDI schedule															
All schedules [1, 2]	13	12	3	18	22	12	9	5.6	6.3	7.0	7.2	8.4	10.3	11.6	12.7
Schedule A	3	11	24	17	31	16	8	1.7	1.8	2.0	2.4	2.9	3.2	3.7	4.0
Schedule B	4	12	8	14	26	12	4	2.0	2.1	2.4	2.6	2.9	3.5	4.1	4.3
Schedule C	20	13	−10	18	32	9	15	1.8	2.4	2.7	2.2	2.6	3.5	3.8	4.4

NOTE.—Projections are corrected for systematic bias; see text.

r Revised.

1. Does not include Canada.

2. Beginning with 1970 Spain is classified in Schedule B; prior to 1970 it is classified in Schedule C.

Source: U.S. Department of Commerce, Office of Business Economics.

Affiliates in other industries are expected to increase outlays 4 percent in 1971 (to $1.4 billion) and 22 percent in 1972 (to $1.7 billion). All major areas of the world showed increases in both years, except Canada, where a slight spending decrease is expected in 1971. Most of the planned growth in this aggregate group is related to expendi-

Table 2.—Estimates of Plant and Equipment Expenditures by U.S. Corporations' Foreign Manufacturing Affiliates, by Selected Country—Summary of Surveys

[Millions of dollars]

	Actual					Projection	
	1966	1967	1968	1969r	1970	1971	1972
All areas	4,583	4,425	4,191	4,976	6,524	6,781	7,012
Chemicals	1,090	1,210	1,308	1,118	1,201	1,310	1,303
Machinery	1,016	1,088	1,010	1,344	1,920	2,053	2,705
Transportation equipment	985	705	918	706	1,090	1,090	1,032
Other manufacturing	1,520	1,432	1,340	1,710	2,260	2,329	2,542
Canada	1,174	1,001	854	1,036	1,159	1,110	1,061
Chemicals	221	100	158	109	180	146	133
Machinery	180	190	144	222	212	258	316
Transportation equipment	265	234	191	211	281	173	183
Other manufacturing	513	411	359	434	472	532	427
Latin American Republics and Other Western Hemisphere	453	545	575	511	663	698	890
Chemicals	140	150	178	108	170	163	193
Machinery	66	78	80	96	141	176	215
Transportation equipment	71	88	90	104	112	110	204
Other manufacturing	171	185	230	214	240	241	278
Argentina[1]	91	100	71	96	138	112	134
Chemicals	27	30	15	14	15	13	14
Machinery	11	18	16	23	45	41	50
Transportation equipment	33	34	22	40	49	31	29
Other manufacturing	20	18	18	19	29	27	35
Brazil	100	131	168	124	181	226	386
Chemicals	19	20	68	72	40	24	56
Machinery	30	35	40	40	60	86	110
Transportation equipment	20	34	51	39	31	51	144
Other manufacturing	32	32	38	33	54	65	77
Mexico	120	133	181	170	205	204	234
Chemicals	62	60	70	58	61	70	67
Machinery	14	17	17	22	29	30	38
Transportation equipment	9	8	6	14	20	30	33
Other manufacturing	45	48	89	76	90	69	89
Other	136	141	130	161	145	157	146
Chemicals	38	30	33	55	54	49	37
Machinery	11	8	12	9	12	14	11
Transportation equipment	12	12	13	11	6	14	8
Other manufacturing	74	90	78	80	73	80	90
Europe	2,211	2,032	2,012	2,638	3,614	3,846	4,427
Chemicals	402	636	524	493	676	749	705
Machinery	604	712	680	881	1,318	1,341	1,807
Transportation equipment	604	279	223	290	551	595	509
Other manufacturing	553	604	590	784	1,071	1,161	1,316
United Kingdom	908	643	582	859	1,073	1,108	1,202
Chemicals	116	127	111	120	175	184	140
Machinery	184	141	148	183	233	278	309
Transportation equipment	180	124	74	108	190	163	135
Other manufacturing	280	251	249	380	480	481	619
European Economic Community	1,331	1,438	1,195	1,440	2,110	2,323	2,775
Chemicals	275	437	314	288	418	481	463
Machinery	444	510	490	629	970	949	1,370
Transportation equipment	373	245	140	210	336	440	390
Other manufacturing	239	250	249	321	402	454	540
Belgium and Luxembourg	180	200	153	111	183	207	230
Chemicals	64	110	78	33	66	88	83
Machinery	21	40	43	30	38	38	73
Transportation equipment	50	23	5	4	7	13	13
Other manufacturing	46	31	27	43	79	68	67
France	268	371	307	308	547	574	708
Chemicals	31	50	28	30	40	30	66
Machinery	130	175	170	192	316	316	430
Transportation equipment	44	75	32	41	64	77	92
Other manufacturing	74	70	48	78	109	123	122
Germany	581	518	424	607	945	1044	1208
Chemicals	60	95	44	65	129	178	182
Machinery	191	184	105	273	480	381	568
Transportation equipment	287	142	106	159	237	338	238
Other manufacturing	43	90	68	110	171	147	226
Europe—Continued							
Italy	126	130	165	181	270	280	370
Chemicals	30	34	39	20	30	32	44
Machinery	57	66	74	90	161	145	229
Transportation equipment	2	2	2	4	5	6	10
Other manufacturing	40	48	50	67	74	70	93
Netherlands	161	149	147	203	229	238	247
Chemicals	102	137	105	141	135	144	120
Machinery	32	38	30	35	53	51	67
Transportation equipment	1	2	1	1	2	6	7
Other manufacturing	16	21	15	20	39	37	46
Other	216	251	236	242	330	325	361
Chemicals	72	83	100	68	63	82	72
Machinery	56	91	64	78	107	115	153
Transportation equipment	11	10	12	12	30	12	14
Other manufacturing	76	59	60	83	130	116	121
Japan	163	190	227	268	374	460	636
Chemicals	66	91	126	108	116	157	197
Machinery	63	49	56	90	173	203	231
Transportation equipment	2	2	3	2	3	2	2
Other manufacturing	33	48	41	68	80	98	200
Australia, New Zealand, and South Africa	329	256	296	306	395	400	465
Chemicals	67	47	80	59	44	37	18
Machinery	47	29	32	36	51	67	60
Transportation equipment	73	80	90	86	105	102	131
Other manufacturing	142	95	101	120	190	204	190
Australia and New Zealand	290	214	244	264	336	327	307
Chemicals	57	33	57	52	38	25	9
Machinery	43	23	26	30	42	49	62
Transportation equipment	53	70	70	60	98	85	98
Other manufacturing	127	82	86	104	159	108	138
South Africa	40	42	52	42	60	73	58
Chemicals	10	14	10	7	9	12	9
Machinery	4	5	6	5	9	8	4
Transportation equipment	10	10	11	6	7	17	33
Other manufacturing	15	13	17	24	38	36	52
Other Africa	56	31	16	14	31	47	21
Chemicals	2	2	4	3	0	4	2
Machinery	....	1	1	2	4	2	2
Transportation equipment	....	....	1	1	1	1	1
Other manufacturing	54	27	9	9	29	40	19
Middle East	23	42	111	73	120	27	10
Chemicals	18	59	103	63	50	2	6
Machinery	2	1	1	2	2	1	1
Transportation equipment	....	....	....	....	....	....	....
Other manufacturing	3	11	7	8	74	24	22
Other Asia and Pacific	150	118	102	130	155	164	168
Chemicals	68	78	47	36	52	50	49
Machinery	72	14	8	18	21	14	27
Transportation equipment	1	5	1	2	1	1	2
Other manufacturing	59	52	46	75	81	99	90
India	91	50	20	47	64	90	85
Chemicals	44	28	11	11	23	25	24
Machinery	15	9	3	5	9	6	18
Transportation equipment	....	....	....	....	....	....	....
Other manufacturing	32	10	12	31	34	59	43
Other	59	68	77	82	89	74	83
Chemicals	24	50	30	24	20	25	25
Machinery	7	8	5	13	12	8	9
Transportation equipment	1	5	1	1	1	1	2
Other manufacturing	26	30	35	45	47	40	47

r Revised.

NOTE.—Projections are corrected for systematic bias; see text.

Source: U.S. Department of Commerce, Office of Business Economics.

tures by affiliates engaged in trade, leasing, and services.

Geographic pattern

After a rise of 20 percent in 1970 to $5.0 billion, European affiliates are expected to increase spending 9 percent in 1971 and 14 percent in 1972 to $6.2 billion (table 1). The relatively small gain in 1971 reflects the moderate 6 percent increase by manufacturing affiliates in the European Economic Community; in 1972, these same affiliates are planning a 19 percent increase. Petroleum affiliates plan a 23 percent increase in 1971 and a 2 percent decrease in 1972. In both years, the growth of spending in European countries outside the EEC is sparked by outlays of manufacturing affiliates in the United Kingdom and petroleum affiliates in the United Kingdom, Denmark, Norway, and Spain.

Spending by affiliates in Canada is expected to increase 13 percent in 1971 and 11 percent in 1972 to $3.4 billion, after increasing 17 percent in 1970. The increases in all 3 years are due largely to expenditures by affiliates in the extractive industries. Expenditures by mining and smelting affiliates are expected to rise 84 percent in 1971 and 11 percent in 1972. This heavy spending is connected with the development of iron ore, nickel, and copper deposits. Manufacturing affiliates in Canada expect to reduce spending moderately in both 1971 and 1972.

Outlays in Latin America are expected to decrease 2 percent in 1971 but to rise 6 percent in 1972 to $2.0 billion. Continuing recent trends, mining and smelting affiliates are expecting to reduce spending in both years, but manufacturing firms are planning a 4 percent rise in 1971 and a 28 percent rise for 1972. Increases planned by manufacturers in Brazil and Mexico are especially large.

Affiliates in "other areas" are planning a 24 percent increase in 1971 to $4.2 billion, and a 6 percent increase to $4.4 billion in 1972. A large portion of the 1971 increase is due to spending by affiliates in mining and smelting and petroleum, which expect increases of 55 percent and 33 percent, respectively. The projected 1972 rise reflects increases in petroleum and manufacturing. The projected 1972 decrease in mining and smelting reflects reduced spending by affiliates in Australia, where large projects to develop nickel and bauxite deposits will be nearing completion.

Classified according to the country schedules established by the Office of Foreign Direct Investments, affiliates in Schedule C countries (including most of continental Western Europe and South Africa), for which controls on capital outflows from the United States are strictest, expect increases of 9 percent in 1971 and 16 percent in 1972, to $4.4 billion (table 1). While these rates of increase are considerably below the 32 percent reported in 1970, total spending by affiliates in Schedule C countries in 1972 will exceed totals for Schedules B and A for the first time since initiation of the control program in 1968. In both 1971 and 1972 the largest increases in the Schedule C aggregate are by manufacturing and petroleum affiliates.

The large expenditures projected by affiliates in Schedule C countries do not necessarily lead to an increase in the use of U.S. funds overseas, which the OFDI program is designed to limit. To the extent that investment needs can be financed by borrowing abroad,

Table 3.—Estimates of Plant and Equipment Expenditures by U.S. Corporations' Foreign Affiliates in the Petroleum and Mining and Smelting, and Other Industries (Except Manufacturing)—Summary of Surveys

[Millions of dollars]

By area and major industry division	Actual					Projection	
	1966	1967	1968	1969 r	1970	1971	1972
Petroleum							
All areas	2,888	3,000	3,311	3,840	3,668	4,642	4,733
Canada	645	636	669	629	720	798	884
Latin American Republics and other Western Hemisphere	265	307	405	601	514	553	535
Venezuela	101	103	176	236	212	210	189
Other Latin American Republics	109	149	204	138	183	245	194
Other Western Hemisphere	55	55	66	125	119	93	52
Europe	773	1,045	851	976	974	1,146	1,167
United Kingdom	193	289	283	240	250	247	274
European Economic Community	434	552	401	472	540	671	648
Belgium and Luxembourg	49	101	73	81	73	133	41
France	68	91	52	86	107	90	119
Germany	172	251	190	154	128	177	208
Italy	97	93	85	111	168	187	105
Netherlands	39	77	82	91	74	78	95
Other	139	174	167	168	172	251	277
Japan	129	146	209	189	242	323	364
Australia, New Zealand, and South Africa	92	96	133	211	185	188	167
Other Africa	265	303	507	509	449	328	234
Middle East	296	251	165	154	141	230	345
Other Asia and Pacific	93	128	156	261	304	388	434
International shipping	40	94	196	318	312	599	670
Mining and Smelting							
All areas	720	920	1,035	1,132	1,384	1,865	2,070
Canada	297	332	398	340	413	762	889
Latin American Republics and other Western Hemisphere	329	288	456	497	477	369	380
Europe:							
European Economic Community	3	3	3	3	4	3	3
Other, including United Kingdom	4	5	7	7	12	15	12
Other areas	287	292	226	285	478	713	730
Other industries (except manufacturing)							
All areas	741	832	880	1,039	1,355	1,466	1,722
Canada	237	264	265	324	434	425	598
Latin American Republics and other Western Hemisphere	144	183	229	249	291	312	325
Europe:							
European Economic Community	85	100	115	143	188	192	251
Other, including United Kingdom	140	240	134	104	237	272	342
Other areas	136	129	113	162	205	267	214

NOTE: Projections are corrected for systematic bias: see text.

r Revised.

Source: U.S. Department of Commerce, Office of Business Economics.

spending for plant and equipment is not limited by OFDI regulations.

Affiliates in Schedule B countries (including the United Kingdom, Japan, and Australia) except to increase spending 12 percent in 1971 and 4 percent in 1972 to $4.2 billion. Affiliates in Schedule A countries (including most of the less developed countries), for which controls on capital outflows are most lenient, show the largest growth in 1971—a rise of 16 percent. An increase of 8 percent to $4.0 billion is expected in 1972.

Note on methodology

The spending projections presented here were prepared with a revised method to eliminate—or at least reduce—any systematic bias in responses to the four expectations surveys taken for each year (in June and December of the preceding year and June and December of the year in question, i.e., *A*, *B*, *C*, and *D* reports). The revised method has two primary advantages over the old method. (For a complete discussion of the old method see the technical note on page 46 of the March 1969 issue of the SURVEY.) The first advantage of the new method is that it relies on experience over the last 5 years to adjust for possible bias in the current projection. The second advantage is that the method is applicable at disaggregated levels, thus making possible tabulation of cell data on a bias-adjusted basis.

The first step under the new method was to calculate, for the 1971 *C* and 1972 *A* reports separately, ratios of actual spending (the final *E* estimate) to the reported expectation, for each of the previous 5 years. No bias adjustment was made unless there was a deviation in the same direction in at least 4 of the 5 years. Also, no adjustment was made to items below $10 million. When an adjustment was necessary under these criteria, the median ratio of actual to expected spending in the 5-year period was applied as an adjustment factor.

The decision as to whether the first (*A*) and second (*B*) survey estimates for a given year need adjustment must be made without actual/expected ratios for the preceding year since there are no actual figures yet available for that year. In deriving the bias-adjusted 1972 data presented here, the years 1966–70 were used since actual data for 1971 are not available. In calculating bias adjustments for the third (*C*) and fourth (*D*) estimates of 1972 spending, the years 1967–71 will be used since final 1971 data will be available.

The tables published in this article were prepared by applying the "four out of five" rule at or below the lowest published country-industry data cell and then summing up to the published totals by industry and area.

A comparison of bias-adjusted projections derived under the old and the new methods indicates only minor differences for the 1971 *C* projection but major differences for the 1972 *A* projection:

	Million $		Percent change from preceding year	
	Old	New	Old	New
1971	14,930	14,988	14	12
1972	15,846	16,504	6	10

(*Continued from page 26*)

to the sample data after they had been rearranged so that production on all sample contracts was treated as beginning at the same time, i.e., in a hypothetical month zero. This rearrangement of the sample data was designed to deal with certain difficulties that stemmed from contract renegotiations. It is apparent that these two modifications of the basic Q–UO model may introduce errors into the calculations. Attempts to define the direction, let alone the magnitude, of these possible errors in a manner helpful to the evaluation of the results have been unsuccessful. Other limitations of the study are discussed in the previous section which deals in greater detail with the sample data.

Estimation of the model

Equation (15) was estimated using an Almon lag. A second degree polynomial was used with the restriction that the coefficient (a_4) of the last lagged variable have the value of zero. This was justified, because the influence of successive UO's diminished quickly.[8]

$$(16)\quad Q_t = \underset{(52.3)}{.0989\,UO_t} - \underset{(-4.13)}{.1173\,\Delta UO_t} - \underset{(-6.79)}{.0824\,\Delta UO_{t-1}} - \underset{(-2.31)}{.0433\,\Delta UO_{t-2}}$$

$R^2 = .951$, Durbin Watson statistic = 1.10, standard error/mean of dependent variable = .118, t ratios in parentheses.

The coefficients on the lagged variables deteriorate smoothly to zero, the t ratios for a^*, a_1 and a_2 are significant at the 99.5 percent level of confidence, and the t ratio for a_3 is significant at the 97.5 percent level. With 33 observations and a Durbin Watson statistic of 1.10, the hypothesis that significant autocorrelation of the error terms exists is not accepted at the 97.5 percent level of confidence.

The actual and predicted values of production on the sample contracts are shown on chart 13.

8. A third degree polynomial and different lag lengths were also tested.